

WATERSHED MANAGEMENT AREA 11

CENTRAL DELAWARE DRAINAGE

The watershed management area includes watersheds draining the central western portion of New Jersey in Hunterdon and Mercer Counties. The Assunpink as well as the Nishisawick, Lockatong, Wickecheoke and Alexsaoken Creeks all flow directly into the Delaware River. The area lies mostly in Hunterdon and Mercer Counties and includes the following watersheds:

Assunpink Creek

Lockatong Creek

Summary of ambient physical/chemical monitoring stations and classifications

Station

Classification

Assunpink Creek near Clarksville
Assunpink Creek at Trenton

FW-2 Nontrout
FW-2 Nontrout

Note: Monitoring at Wickecheoke Creek at Stockton (FW-2 Trout Maintenance) was discontinued in 1991.

OVERALL MANAGEMENT AREA ASSESSMENT

- Swimmable Support Status:

WATERWAY

LOCATION

STATUS

Assunpink Ck
Assunpink Ck

near Clarksville
at Trenton

Full Support
No Support

- **Summary of Aquatic Life Support Status (Number of stations within each assessment category).** Note: See the Biological Assessment Table located at the end of this section for details regarding macroinvertebrate assessments within the watershed management area.

No Impairment: 25

Mod. Impairment: 13

Severe Impairment: 6

MAPS here

ASSUNPINK CREEK

WATERSHED DESCRIPTION

The Assunpink Creek drains an area of 91 square miles. It is about 25 miles long, flowing from Millstone Township in Monmouth County through central Mercer County to the Delaware River at Trenton. Shabakunk Creek and Miry Run are the major tributaries to the Assunpink. A number of impoundments exist along Assunpink Creek and its tributaries for flood control and other purposes.

Land uses in this watershed are both agricultural/undeveloped and urban/suburban. Population is centered in Trenton and surrounding areas. The waters of the Assunpink Creek watershed are classified primarily FW-2 Nontrot with a two mile stretch determined to be FW-2 Trout Maintenance.

WATER QUALITY ASSESSMENT

Physical/Chemical Water Quality

Locations: Assunpink Creek at Clarksville and Trenton

Dissolved Oxygen: Acceptable at both locations.

Temperature: No violations of the upper criterion for non-trout waters.

Nutrients: At Clarksville, inorganic nitrogen is acceptable, median value is 0.56 mg/l. Total phosphorous is, in contrast, elevated, with 65% of samples exceeding the criterion. The median value was 0.06 mg/l.

At Trenton, inorganic nitrogen is very high, with a median value of 2.97 mg/l. Total phosphorous is also very high, with 89% of samples exceeding the criterion. The median value was 0.34 mg/l.

Bacteria: Very low bacterial levels were recorded at Clarksville. The geometric mean was 37.4 MPN/100 ml and only one sample exceeded the 400/100ml criterion. This is in marked contrast to Trenton where the sanitary quality was very poor. At Trenton, the geometric mean was 4926 MPN/100 ml and almost 90% of samples exceeded 400 MPN/100 ml.

Heavy Metals: At Clarksville, one copper sample approached but did not exceed the chronic criteria for aquatic life support. Two of the four lead records exceeded the chronic criteria for aquatic life support for lead.

Assunpink Creek continued:

Copper and lead appeared to be problems at Trenton where two of the four copper samples exceeded the chronic criteria for aquatic life support and where all four lead samples exceeded the same criterion for lead. One of the copper samples also, in essence, was recorded at the level of the acute criterion.

Sodium: Very low at Clarksville (median equaled 6.5 mg/l); one violation of the criterion was recorded at Trenton (median equaled 24.5 mg/l).

Other: Two violations of the upper pH criterion were observed at Clarksville.

Summary: Water quality at Clarksville is good with respect to nutrients, with phosphorus being a slight problem at this location (note that the criterion here for phosphorus is 0.05 mg/l). Sanitary quality is very good. Lead and possibly copper, however, appear to be problems which need to be further examined.

Water quality at Trenton is poor. Nutrients are elevated, sanitary quality is very poor and the water seems to have excessive copper and lead.

Biological Monitoring

The macroinvertebrate community within the uppermost portion of the Assunpink Creek (in Roosevelt) is assessed to be severely impaired. Farther downstream in the region around Edinburg, the community appears to be healthy. In Trenton, the biota is assessed to be moderately impaired.

Of the tributaries in the region, Shipetauken and Pond Run are assessed to be severely impaired. Shabakunk Creek appears to be severely impaired in its upper half and moderately impaired in the lower. Little Shabakunk Creek and Miry Run are assessed to be moderately impaired. See the Biological Assessment Table located at the end of this section for details regarding macroinvertebrate assessments within the watershed.

POINT SOURCE ASSESSMENT

Point source discharges influence water quality conditions in the lower sections of Assunpink Creek, especially from Whitehead Mill Pond downstream. Impacts from point sources above the pond have been reported in the past to be localized. No dischargers are currently reported to be out of compliance in this watershed.

NONPOINT SOURCE ASSESSMENT

In the Upper Assunpink subwatershed an increase in suburban and commercial development is currently underway, but water quality does not appear to have been adversely impacted. Pollution problems may be masked by the retention effects of a number of impoundments on the creek which are used for flood control purposes. The problems conveyed in the monitoring data for the Upper Assunpink are likely nonpoint source related. Crop production in the upstream sections of the Assunpink is known to have led to soil erosion and stream siltation. Farther downstream, agriculture gives way

to urban runoff as the principal source of nonpoint source contamination, specifically land development and urban runoff. In Trenton, however, water quality degradation is evident from the large municipal and industrial wastewater contributions to the creek. These wastewaters, combined with the effects of stream channelization and nonpoint sources, result in a water body that cannot assimilate organic and nutrient loads. The high bacterial levels are due to urban runoff.

Evaluated lakes in the Assunpink watershed - Lake Assunpink, Stone Tavern Lake, Rising Sun Lake, and Mercer Lake - are all believed to receive some nutrient loading from agricultural and residential runoff.

DESIGNATED USE ASSESSMENT

The "aquatic life support" designated use is not supported in the upper-most reach of the Assunpink Creek watershed (in Roosevelt). The central portion of the stream fully supports the use while the lower sections, in Trenton, partially support the use.

The primary contact (swimmable) use is fully supported at the Clarksville monitoring location and not supported in the lower reaches.

WICKECHEOKE CREEK AND THE DELAWARE RIVER TRIBUTARIES OF HUNTERDON COUNTY

WATER QUALITY ASSESSMENT

The tributaries to this 45 mile length of the Delaware River include Hakiwokake, Hariwokake, Nishisakawick, Lockatong, Wickecheoke, Alexauken, and Swan Creeks in Hunterdon County, and Moores, Fiddlers, and Jacobs Creeks in Mercer County. This is a total drainage area of 200 square miles, with approximately 75 total stream miles. The Delaware and Raritan Canal originates in this area. There are no large population centers here, but smaller towns are Milford Borough, Frenchtown, Sergeantsville, Lambertville and Stockton. Two impoundments are the Swan Creek Reservoirs, East and West.

The land use in this area is primarily agricultural and forested, with residential and commercial development scattered throughout. Residential development is increasing in these small watersheds. The waterways in this section have been classified FW-1 at Washington's Crossing State Park, FW-2 Trout Production, FW-2 Trout Maintenance and FW-2 Nontrout.

Physical/Chemical Water Quality: The last of the ambient physical/chemical monitoring stations within this region was discontinued in 1991. Monitoring now is limited to biological assessments.

Historical Water Quality Summary:

Prior to 1991 and throughout the latter half of the 1980s, Wickecheoke Creek at Stockton was the only ambient monitoring station on the Delaware River tributaries between the Musconetcong River and the Assunpink Creek. Streams with sampling data up to 1982 had included Lockatong Creek, Hakiwokake Creek, Hariwokake Creek, Alexauken Creek and Swan Creek. The streams in this section are small with summer flows generally falling below 20 cubic feet per second (cfs). Wickecheoke Creek, based upon its last ambient monitoring assessment had good overall water quality, with conditions degrading to fair in mid-summer. Water quality problems observed were elevated stream temperatures in warm weather periods and excessive levels of total nitrogen. Some limited violations (7 percent) of State criteria for fecal coliform were recorded, yet the geometric mean for the last period of assessment (68 MPN/100 ml) was low.

Un-ionized ammonia exceeded the State water quality criterion for trout maintenance waters in 10 percent of all samples, with violations usually occurring in July. The pH values indicated highly alkaline conditions due to the nature of the region's bedrock material. No excessive metal values within the water column were observed during this last period of assessment.

Biological Monitoring

Macroinvertebrate sampling within the watershed found largely non-impaired conditions. Locations that appeared to have moderately impaired biota were the lower end of Harihokake Creek. Moderately impaired biota were also observed at the upper-most sites on each of the following; the Lockatong Creek, Wickecheoke Creek and Plum Brook. Also assessed to be moderately impaired were Cooper Creek, Swan Creek, the lower end of Moores Creek, as well as portions of Jacobs Creek.

POINT SOURCE ASSESSMENT

Any introduction of pollutants into these streams can have a deleterious impact, especially during low flow periods. No permitted facilities are currently reported to be out of compliance within this watershed as of the end of 1996 (see Point Source Pollution Table).

The following wastewater treatment plants have been upgraded and/or expanded and have renewed operation:

FACILITY	LOCATION	RECEIVING STREAM	COMMENTS
Mercer Co. Corrections Center	Hopewell Twp., Mercer Co.	Morris Cr. (Lockatong Cr. watershed)	ACO had required the construction of a new & expanded treatment plant
Phillipsburg STP	Phillipsburg Town, Warren Co.	Lopatcong Creek	Treatment system has been upgraded via an ACO executed with the DEP. Upgrades were required due to violations of effluent limitations. Upgrade completed in June 1992.

The Texas Eastern facility in West Amwell, Hunterdon County, is a hazardous waste site and was suspected in the past to be polluting Alexauken Creek with PCBs, PHC and dioxin. Its current status has not been determined.

NONPOINT SOURCE ASSESSMENT

Locatcong and Wickecheoke Creeks are impacted by runoff from crop land and from pasture land. These agricultural sources are believed to be on the decline and are being replaced by increasing quantities of runoff from road construction/maintenance. These streams also receive occasional septic tank leachate which is suspected to have contributed to nutrient enrichment and fecal coliform contamination.

Alexauken Creek is assessed to be impacted by a wide range of nonpoint pollution sources. Agriculture, specifically crop and pasture land, contributes fertilizers, soil and manure runoff. Suburban runoff from storm sewers contribute oils, salts and fecal coliform contamination. Alexauken Creek receives nutrients and fecal bacteria from local septic systems.

DESIGNATED USE ASSESSMENT

Of the Delaware River tributaries discussed in this segment, the most recently monitored for sanitary quality was the Wickecheoke. As of 1990, its water quality did not support primary contact recreation based upon fecal coliform levels. Its current status is unknown.

Based upon macroinvertebrate assessments, most of the waters assessed here fully support the "aquatic life support" designated use. Partial support is observed at a limited number of biomonitoring sites within this area.

BIOLOGICAL ASSESSMENT TABLE: AREA 11

Mgt Area	Watershd	Site ID	Water Body	Location	Municipality	Sample Date	Biological Impairment Rating
11	32	AN0075	Hakihokake Ck	Myler Rd	nr Ltl York	Jul 28, 1992	non-impaired
11	32	AN0076	Hakihokake Ck	Miller Park Rd	Holland Twp	Jul 28, 1992	non-impaired
11	32	AN0077	Hakihokake Ck	Bridge St	Milford	Jul 28, 1992	non-impaired
11	32	AN0078	Harihokake Ck	Hartpence Rd	Alexandria	Jul 27, 1992	non-impaired
11	32	AN0079	Harihokake Ck	River Rd	abv Frenchtown	Jul 27, 1992	moderately impaired
11	32	AN0080	Nishisakawick Ck	Airport Rd	Alexandria	Jul 27, 1993	non-impaired
11	32	AN0080	Nishisakawick Ck	Airport Rd	Alexandria	Oct 6, 1992	non-impaired
11	32	AN0080	Nishisakawick Ck	Airport Rd	Alexandria	Jan 22, 1993	non-impaired
11	32	AN0080	Nishisakawick Ck	Airport Rd	Alexandria	Apr 12, 1993	non-impaired
11	32	AN0081	Nishisakawick Ck		blw Everittstown	Jul 27, 1992	non-impaired
11	32	AN0081	Nishisakawick Ck		blw Everittstown	Oct 6, 1992	non-impaired
11	32	AN0081	Nishisakawick Ck		blw Everittstown	Jan 22, 1993	non-impaired
11	32	AN0081	Nishisakawick Ck		blw Everittstown	Apr 12, 1993	non-impaired
11	32	AN0082	Nishisakawick Ck	Creek Rd (Frenchtown Pk)	Frenchtown	Jul 27, 1992	non-impaired
11	32	AN0082	Nishisakawick Ck	Creek Rd (Frenchtown Pk)	Frenchtown	Oct 6, 1992	non-impaired
11	32	AN0082	Nishisakawick Ck	Creek Rd (Frenchtown Pk)	Frenchtown	Jan 22, 1993	non-impaired
11	32	AN0082	Nishisakawick Ck	Creek Rd (Frenchtown Pk)	Frenchtown	Apr 12, 1993	non-impaired
11	32	AN0083	Ltl Nishisakawick Ck	Rt 29	Frenchtown	Jul 21, 1992	non-impaired
11	32	AN0084	Copper Ck	Horseshoe Bend Rd	blw Frenchtown	Jul 21, 1992	moderately impaired
11	32	AN0085	Warford Ck	Rt 29	Kingwood Sta	Jul 20, 1992	non-impaired
11	32	AN0086	Lokatong Ck	Oak Grove Rd	Oak Grove	Jul 21, 1992	moderately impaired
11	32	AN0087	Lokatong Ck	Rt 12	Baptistown	Jul 21, 1992	non-impaired
11	32	AN0088	Lokatong Ck	Rt 519	Kingwood	Jul 21, 1992	non-impaired
11	32	AN0089	Lokatong Ck	Rt 29	Raven Rock	Jul 21, 1992	non-impaired
11	32	AN0090	Wickecheoke Ck	Rt 579	Croton	Jul 20, 1992	moderately impaired
11	32	AN0091	Wickecheoke Ck	Locktown - Sergeantsville Rd	Locktown	Jul 20, 1992	non-impaired

BIOLOGICAL ASSESSMENT TABLE continued:

Mgt Area	Watershd	Site ID	Water Body	Location	Municipality	Sample Date	Biological Impairment Rating
11	32	AN0092	Plum Bk	Rt 579	nr Croton	Jul 20, 1992	moderately impaired
11	32	AN0093	Plum Bk	Pine Hill Rd	Delaware Twp	Jul 20, 1992	non-impaired
11	32	AN0094	Wickecheoke Ck	Sergeantsville Rd	Sergeantsville	Jul 20, 1992	non-impaired
11	32	AN0095	Wickecheoke Ck	Rt 29	Prallsville	Jul 20, 1992	non-impaired
11	32	AN0096	Alexauken Ck	Lambertville Rd	W Amwell Twp	Jul 14, 1992	non-impaired
11	32	AN0097	Alexauken Ck trib	Queen Rd & Alexauken Ck Rd	Mt Airy	Jul 14, 1992	non-impaired
11	32	AN0098	Alexauken Ck	Rt 29	Lambertville	Jul 14, 1992	non-impaired
11	32	AN0099	Swan Ck	Swan St	Lambertville	Jul 14, 1992	moderately impaired
11	32	AN0100	Moores Ck	Barry Rd	W Amwell Twp	Jul 14, 1992	non-impaired
11	32	AN0101	Moores Ck	Rt 29	Hopewell Twp	Jul 14, 1992	moderately impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	May 12, 1987	non-impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Aug 24, 1987	non-impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Oct 27, 1987	non-impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Jul 13, 1992	non-impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Oct 6, 1992	non-impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Jan 21, 1993	moderately impaired
11	32	AN0102	Jacobs Ck	Woosamonsa Rd	Hopewell Twp	Apr 8, 1993	non-impaired
11	32	AN0103	Airport Br	Rt 579	Hopewell Twp	Jul 13, 1992	moderately impaired
11	32	AN0104	Woolseys Bk	Rt 546	Hopewell Twp	Jul 13, 1992	moderately impaired
11	32	AN0105	Jacobs Ck	Rt 546	Hopewell Twp	May 12, 1987	non-impaired
11	32	AN0105	Jacobs Ck	Rt 546	Hopewell Twp	Aug 24, 1987	non-impaired
11	32	AN0105	Jacobs Ck	Rt 546	Hopewell Twp	Oct 27, 1987	non-impaired
11	32	AN0105	Jacobs Ck	Rt 546	Hopewell Twp	Jul 13, 1992	non-impaired
11	32	AN105A	Jacobs Ck	abv Pleasant Valley Rd	Hopewell Twp	May 12, 1987	non-impaired
11	32	AN105A	Jacobs Ck	abv Pleasant Valley Rd	Hopewell Twp	Aug 24, 1987	non-impaired

BIOLOGICAL ASSESSMENT TABLE continued:

Mgt Area	Watershd	Site ID	Water Body	Location	Municipality	Sample Date	Biological Impairment Rating
11	32	AN105A	Jacobs Ck	abv Pleasant Valley Rd	Hopewell Twp	Oct 27, 1987	non-impaired
11	32	AN0106	Jacobs Ck	Rt 29	Hopewell Twp	May 12, 1987	moderately impaired
11	32	AN0106	Jacobs Ck	Rt 29	Hopewell Twp	Aug 24, 1987	moderately impaired
11	32	AN0106	Jacobs Ck	Rt 29	Hopewell Twp	Oct 27, 1987	moderately impaired
11	32	AN0106	Jacobs Ck	Rt 29	Hopewell Twp	Jul 13, 1992	non-impaired
11	32	AN106A	Jacobs Ck	Bear Tavern Rd	Hopewell Twp	May 12, 1987	moderately impaired
11	32	AN106A	Jacobs Ck	Bear Tavern Rd	Hopewell Twp	Aug 24, 1987	non-impaired
11	32	AN106A	Jacobs Ck	Bear Tavern Rd	Hopewell Twp	Oct 27, 1987	non-impaired
11	32	AN0107	Gold Run	Rt 29 & L Ferry Rd	Wilburtha	Jul 13, 1992	non-impaired
11	40	AN0108	Assunpink Ck	Roosevelt Rd	Roosevelt	Mar 4, 1992	severely impaired
11	40	AN0109	Assunpink Ck	Rt 535	Edinburg	Mar 4, 1992	non-impaired
11	40	AN109T	Assunpink Ck trib	nr Assunpink WMA office	Millstone Twp	May 22, 1991	severely impaired
11	40	AN0110	Shipetauken Ck trib	Van Kirk Rd	Lawrence Twp	May 21, 1991	moderately impaired
11	40	AN0110	Shipetauken Ck trib	Van Kirk Rd	Lawrence Twp	Sep 24, 1991	non-impaired
11	40	AN0110	Shipetauken Ck trib	Van Kirk Rd	Lawrence Twp	Dec 9, 1991	moderately impaired
11	40	AN0110	Shipetauken Ck trib	Van Kirk Rd	Lawrence Twp	Mar 3, 1992	severely impaired
11	40	AN0111	Shipetauken Ck	Rt 583	Lawrence Twp	Mar 4, 1992	severely impaired
11	40	AN0112	Ltl Shabakunk Ck	Rt 206	Lawrence Twp	Mar 4, 1992	moderately impaired
11	40	AN0113	Shabakunk Ck	Bull Run Rd	Ewing Twp	Mar 4, 1992	severely impaired
11	40	AN0114	Shabakunk Ck	Rt 206	Lawrence Twp	Mar 4, 1992	moderately impaired
11	40	AN0115	Miry Run	Rt 533	Hamilton Twp	Mar 4, 1992	moderately impaired
11	40	AN0116	Assunpink Ck	Mulberry St	Trenton	Mar 4, 1992	moderately impaired
11	40	AN0117	Pond Run	Rt 533	Hamilton Twp	Mar 4, 1992	severely impaired
11	40	AN0118	Assunpink Ck	Willow St	Trenton	Mar 3, 1992	moderately impaired